



***PANEL 7:  
Manufacturers-  
Supply Chain Control***

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# International Standards in Design

Standardization of requirements in design is less mature and significantly more difficult than quality/production

- Everyone's quality system looks about the same (AS9100), but design requirements, philosophies, etc. are different
- Intellectual property concerns
- ITAR/Export restrictions/ Environmental Reg.

System Suppliers must deal with high level requirements which are normally design/architecture specific

- Supplier requirements are an outcome of preliminary design.
  - Functionality/Performance
  - Failure effects/probability
  - Reliability/Effect on dispatchability

There is no standard for design like AS9100 is for quality

# Embraer Use of Int'l Design Standards

Embraer follows consensus standards for components when possible...

- Design Standards TSO, SAE, ASTM, MIL, DIN, RTCA, EUROCAE
- Process Standards like ARP-4754/ED-79

..and only require compliance with additional standards when necessary...

- Functionality/Performance
  - Failure effects/probability
  - Reliability/Effect on dispatchability

## Specific Difficulties

- Lack of “systemic recognition” of DOA approved data (FAA/ANAC only recognize TC holder)
  - Requires follow-on DER data approval (OEM level of involvement = 100%)
  - Lack of sufficient documentation to support this approval
    - Format/language differences
    - ITAR/Competitive issues limit data availability

OEM assumes more of the design risk from the supplier

# Competitive Issues

At the lower component level, common standards can save resources...

...at high levels, requirements become more design specific and can be a competitive advantage

- Lends itself to less standardization
- Intellectual property issues
- The cost of this lack of standardization will be included in the Suppliers cost to OEM.
  - Design effort
  - Qualification testing
  - Compliance documentation (SSAs, CMMs, etc.)
  - Requires more day-to-day supplier assistance during development

OEMs have to consider this risk during supplier selection

A long history of collaboration, but industry is still seeking the ideal level of standardization in design

A natural process....

...one that does not need external forcing (authority, customer).